

REMARKS

The claims have been amended to limit the negative electrode to one comprising carbon as a negative electrode active material. This amendment is supported in paragraph [0016] of the specification of the present application as filed.

Referring to the Action, claims 1-4 and 9-12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yoshimura et al., U.S. Patent Application Publication No. 2002/0051910 ("Yoshimura"). Claims 5-8 and 13-16 are rejected under 35 U.S.C. 103(a) as obvious over Yoshimura.

These rejections appear to be based on an understanding by the Office that Yoshimura discloses, explicitly or inherently, all of the limitations of the claims of the present application including the limitation that the separator of the lithium secondary battery of the present invention comprises polyethylene.

The Office's understanding is not correct. The separator of Yoshimura comprises repeating units wherein p-phenylene is combined with a certain specified group. The Office refers to paragraph [0046] of Yoshimura for the disclosure of a polyethylene separator. However, paragraph [0046] describes the use, in comparative example 1.4, of an ethylene group (the (A) group in the formula shown in

the heading of Table 2) as the group combined with the p-phenylene in the repeating units. A polymer of the units in comparative example 1.4 is not a polyethylene and does not comprise polyethylene.

Removal of the rejections based on Yoshimura is in order.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwamoto et al. (U.S. Patent Application Publication No. 2002/0039677 A1; hereinafter "Iwamoto") in view of Kim et al. (U.S. Patent Application Publication No. 2003/0073005 A1; hereinafter "Kim").

The Office is taking the position in this rejection that, first, Iwamoto discloses a battery including each of the limitations of the claims except that, although Iwamoto discloses that a solvent for the electrolyte of the battery can include 1,3-dioxolane, Iwamoto does not disclose that the 1,3-dioxolane is combined with ethylene carbonate and γ -butyrolactone. The Examiner is taking the position, second, that Kim teaches the use of dioxolane as a lithium protective solvent in a lithium battery in an amount of 0-30 vol %. The Examiner concludes that it would have been obvious to incorporate dioxolane in an amount of 0-30 vol % in the lithium battery of Iwamoto [in which the electrolyte comprises ethylene carbonate and γ -butyrolactone].

Applicants respectfully submit that the prior art fails to support the obviousness of incorporating dioxolane in an amount of 0-30 vol % in the lithium battery of Iwamoto [in which the electrolyte comprises ethylene carbonate and γ -butyrolactone] and the negative electrode comprises carbon as a negative electrode active material as now recited in the claims of the present application.

In Kim, dioxolane is disclosed as a lithium protecting solvent. (See paragraph [0042] of Kim). Kim defines the term "lithium protecting solvent" as "a solvent capable of providing the surface of the lithium metal with a good protective layer (i.e., a stable solid-electrolyte interface (SEI) layer), ..." (See paragraph [0039] of Kim). (Emphasis applicants'). A person of ordinary skill in the art would not have been motivated to use dioxolane as a protecting solvent in the lithium battery of Iwamoto [in which the electrolyte comprises ethylene carbonate and γ -butyrolactone] and the negative electrode comprises carbon as a negative electrode active material and where formation of an SEI with lithium metal is not required.

Removal of the rejections based on the combination of Iwamoto with Kim is also in order.

PATENT APPLN. NO. 10/646,810
RESPONSE UNDER 37 C.F.R. §1.111

**PATENT
NON-FINAL**

The foregoing is believed to be a complete and proper response to the Office Action dated August 30, 2007, and is believed to place this application in condition for allowance. If, however, minor issues remain that can be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number indicated below.

In the event that this paper is not considered to be timely filed, applicant(s) hereby petition(s) for an appropriate extension of time. The fee for any such extension may be charged to our Deposit Account No. 111833.

In the event any additional fees are required, please also charge our Deposit Account No. 111833.

Respectfully submitted,

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